GIS Co-operative Projects at Fleming College

1. Introduction:

The **GIS Applications Specialist** and **GIS Cartographic Specialist** programs at Fleming College in Lindsay Ontario are 2.5-semester Ontario Graduate Certificate programs.

A **GIS Co-operative Project** is completed during the second and a third (half) semester of both programs, designed to help the students apply their new skills in a project-based learning environment.

A project **client** is usually an individual or group from an industry, government, or community organization. Clients that are internal or external to the college are welcome.

Project **teams** will consist of two or three students, although three is recommended (depending on the nature of the project). Projects are completed to the best of the students' ability, with the guidance of a faculty advisor, and without labour costs to the client. However, clients should not expect the same quality of work as they would receive from a paid professional. **Copies of projects are retained by the college for demonstration purposes and students will show projects to prospective employers**.

2. Project Timeline

The client's request for a GIS co-operative project (i.e. the "Request for Project" or "RFP") can be submitted on the Geomatics Community site (www.GeoCommunity.net) at any time for the consideration of students and faculty. Alternatively, a word document may be obtained from the GIS co-op project liaison listed at the bottom of this document. Please note, however, that RFPs *should* be received before November 21st of each year to be considered by students and completed by the end of June of the following calendar year. This deadline may be flexible particularly for projects initiated by students.

In the second semester (January to April each year), students will select a client and project, plan and design their project, prepare a proposal, and gather required source data in the **Project Planning and Management** course. In the third half semester (May and June), during the **GIS Co-operative Project** course, students will complete the actual project, prepare project documentation, and conduct project demonstrations. Although students have been allocated a significant block in their third half semester timetable to complete the project, they still have other courses and responsibilities during that semester

The **critical GIS Co-op Project events** within each program cycle (from early September to the end of June each year) are listed in the table below. (note: this information may be adjusted to better meet the needs of those involved):

	Event	Week	Approximate Date	Responsible Party	Description
Semester 1 – September to December					
1	**Program Begins**	1	Sep 06	Students	New program cycle (Sep to June) begins. Students are encouraged to invite potential clients to submit requests and review previously completed projects.
2	**Request for Project**	12	**Nov 21**	Client	Deadline for submission of a Request for Project to Project Liaison for approval and potential completion during the summer semester. This deadline may be flexible particularly for projects initiated by students.
3	**Project Approval**	14	Dec 9	Faculty (Client)	Project Liaison completes review of current RFPs and possibly engages client in clarification or revision of content. Once approved, students and other faculty are notified and RFPs are available online.
4	**Project Review**	14	Dec 9	Students	Students begin to review current RFPs, research relevant subject areas, and consider potential projects and team members.
Semester 2 – January to April – Project Planning and Management course					
5	**Project Data**	4	**Jan 31**	Client	Deadline for receipt of client data and metadata by faculty or students. If submission of full dataset is not feasible, a representative sample dataset must be submitted.
6	**Projects Awarded**	4	Jan 31	Faculty (Client)	Faculty award projects to student teams based on greatest likelihood for success, with help of client if necessary.
7	**Project Software**	5	Feb 10	Client	Deadline for receipt of any software that is required for the project and not available at the college
8	**Draft Proposal**		TBA	Students	Project Team submits preliminary proposal to Advisor and Reader (with digital copy sent to client) for comments.
9	**Final Proposal**		TBA	Students	Project Team submits revised proposal to Advisor and Reader for evaluation (with digital copy to client).

Semester 3 – May and June – GIS Co-operative Project course					
10	**Milestone Meeting**	3	May 25	Students	Project Team presents interim report and demonstration of project progress and status to Advisor for evaluation based on project schedule.
11	**Final Report**	6	June 15	Students	Project Team submits detailed description of completed project to Advisor and Reader, with User Guide and Appendices, to be evaluated based on quality and technical content.
12	**Oral Defense & Project Evaluation**	7	TBA	Students	Presentation to advisor and faculty committee, evaluated based on quality of presentation and project. Diagnostic testing and evaluation of final product in terms of achieving proposed objectives and satisfying client requirements.
13	**Project Archive**	**8**	June 26	Students	Project Team organizes project archive with updated files and documentation.
14	**Public Demonstration**	**8**	June 26	Students, Client	Students demonstrate their project to client and others during Open House.

3. Project Requirements:

To fulfill project course requirements, **at least *four* of the following *six* components** must be part of a GIS Co-operative Project. All projects chosen by GIS Cartographic students must include a significant Cartographic component. Any exception must be approved by the student team's semester 2 faculty advisor.

a. **Data Acquisition and/or Pre-processing** - acquiring field data, directly or indirectly, independent research including: collecting attribute data, data quality assurance; conversion and preparation of spatial data in proper coordinate systems and datums, converting data into required software-specific format, clipping and edge-matching map files

b. **Database Design and/or Processing** - design and development of databases with conceptual and logical data models, or manipulating data in existing databases

c. **Spatial and Statistical Analysis** - GIS analysis (e.g. overlays, map algebra, proximity analysis) to meet specific objectives; correlation, comparisons, trend identification of empirical data

d. **Programming** - customization of software applications to meet client's specific needs, automation of complex or repetitive tasks, etc.

e. **Presentation and Visualization** - effective cartographic output and visual communication with at least one hard-copy map product

f. **Web Technology** - may include use of Flash, HTML, JavaScript, web programming, and/or web GIS for the delivery and presentation of spatial data (i.e. using the web as a cartographic medium), and in some cases, for the delivery of GIS functionality as well.

Note that the above arrangement is subject to department approval. The purpose of providing some choice in the components included in a project is to allow some flexibility in the nature of the projects that students undertake. For example, a GIS database application may be developed by a student team as a project that does not include a **significant** *Presentation and Visualization* component. Likewise, a major Cartographic project can be undertaken by a student team even if it does not include a *Programming* component.

4. Client Responsibilities:

If the students are to meet these requirements the client must be prepared to provide the following:

Project Specifications

- Clear concise project specifications, with clearly defined progress indicators, goals and deliverables, are critical for success. If necessary, the students can help the client to define project specifications based on a precise description of client requirements or of the problem to be solved.

Data

- When available, spatial and attribute data, together with corresponding metadata, must be provided **before January 31** of each year. Data acquisition, i.e. digitizing and scanning can take a considerable amount of time and does not allow the student to fulfill the other project requirements listed above. Projects with existing digital data will be given priority.
- If the client does not have the spatial data required for the project, the students must be given direction as to a reliable data source agency: i.e. OMNR, Stats Canada. All costs associated with acquiring the data are the responsibility of the client
- **Any data provided by the college remains the property of the college.**

Hardware/Software

- If the completion of the project requires equipment or applications that are not currently available at the college (see list below), the client is responsible for providing the necessary hardware, software and licensing (a six-month evaluation license is usually sufficient) to the college **by February 10**.

Communication

- The client must be available to discuss project details with the students, either by telephone or email, at least 3 times throughout each of semesters two and three. More regular contact is encouraged depending on the nature of the project.
- The client must provide the students with contact information.
- The client must be prepared to answer student inquiries regarding the project in a timely manner. Please understand that the students must meet deadlines. Your promptness in responding to questions will be greatly appreciated.

Participation

- In addition to the requirements above, clients are expected to participate in the project by submitting a request for proposal by Nov 21, submitting required project data by Jan 31 and required software by Feb 10, assisting faculty as necessary in awarding projects to student teams, providing feedback on draft proposal, and attending project demonstration during Open House (June 26).

5. Resources Available:

The following is a list of resources available at Fleming College for the completion of co-operative projects. Some software is not available on all operating systems.

5.1 OS

Windows XP Professional, Windows server 2003, Server 2008
Fedora, Ubuntu, Debian
Linux

5.2 Hardware

Colour and greyscale laser printers
Large format colour plotter
Scanners - tabloid
Digitizing tablets -Summa Sketch, small format
GPS receivers – GeoExplorer 3, GeoXT, eTrex, Nomad G series
CD Burners
DVD Burner

5.3 Software Taught

Adobe Illustrator CS5	GeoMedia Professional 6
Adobe Photoshop CS5	Dreamweaver CS5
ArcGIS 10.0 (ArcInfo)	Flash CS5
ArcIMS 10.0	Manifold
ArcObjects	MaPublisher 6.2
ArcPad	MS Office 2007
ArcServer	Oracle 11g Spatial
AutoCAD Map3D 2012	Pathfinder Office 2.80
AutoCAD Civil 3D 2012	PCI Geomatica 10.3
Autodesk MapGuide 6.3	Python 2.6
Autodesk MapGuide O/S	Visual Studio 2008
ColdFusion 6	

5.4 Additional Software

ArcView 3.3	MS SQL Server 2005
ASP.NET 3.5	MySQL 5
MapServer	PHP 5

6. Student Skills:

During the program, students will become familiar with the following:

Coding and Programming Languages: ArcXML, CFML, CSS, HTML, JavaScript, PL/SQL, Python, SQL, VBA, Visual Basic .NET, ADO .NET

GIS Software Skills: Please refer to the table above. Please note that students must teach themselves any software required for the co-operative project that is not in the list above.

Cartographic Skills: Digital Mapping; Cartographic Design and Cartographic Production; Visual Communication; Web Design

Other: Various methods of data acquisition including surveying techniques using Total Station and Differential GPS; CAD; Relational Database Management and Design; External connection of RDBMS to GIS; Statistical analysis techniques; Customization techniques for GIS software; Web GIS development; Remote Sensing

Curriculum Details: please refer to Full Time Programs: Post Graduate on the Fleming College web site for details regarding current curriculum and training

Please feel free to contact **Karen Whillans** to discuss any aspect of your GIS Co-operative Project using the email address or phone number below

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